CubeSat Design Tool

Completed Technology Project (2015 - 2016)

Project Introduction

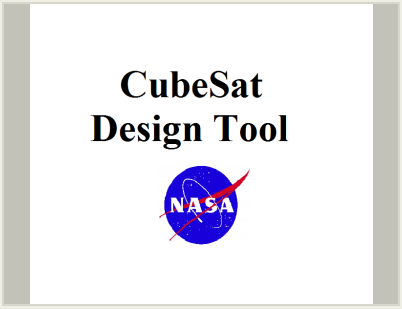
The CubeSat Design Tool will assist CubeSat mission design teams in creating a feasible CubeSat proposal. An extensive CubeSat database contains data on CubeSat parts, which then gets fed into a program to downselect components based upon mission requirements, information gathered about flight heritage, and prior lessons learned. The user will then be able to pick and place the components using a graphic user interface (GUI) and a prompt. This project will simplify the proposal step and expand the user's reach in choosing the correct CubeSat components for the mission.

The goal of the CubeSat Design Tool is to gather all of the elements needed for CubeSat design in one place and make them readily accessible and easy to use. The tool consists of three parts: The Model Based Systems Engineering (MBSE) program, the Graphical User Interface (GUI), and the wiki page. The MBSE program selects compatible and optimized CubeSat parts from a database. These parts are then positioned inside of the CubeSat structure by the user, using the GUI portion of the tool. Part details will be stored in and accessed from the wiki page, including flight history, lessons learned, datasheets, and radiation tolerances.

This program will aid in the selection of components and systems for CubeSat mission proposals. It will use MBSE programming to select parts compatible with user-inputted requirements and constraints, selected from a preexisting CubeSat parts database. The parts will then be ported over to a GUI (graphical user interface) which uses part boundaries and connector/hardware locations to help the user snap the part into place within a CubeSat structure. Mass, hardware required, and other parameters can be obtained from the finished model.

Anticipated Benefits

N/A



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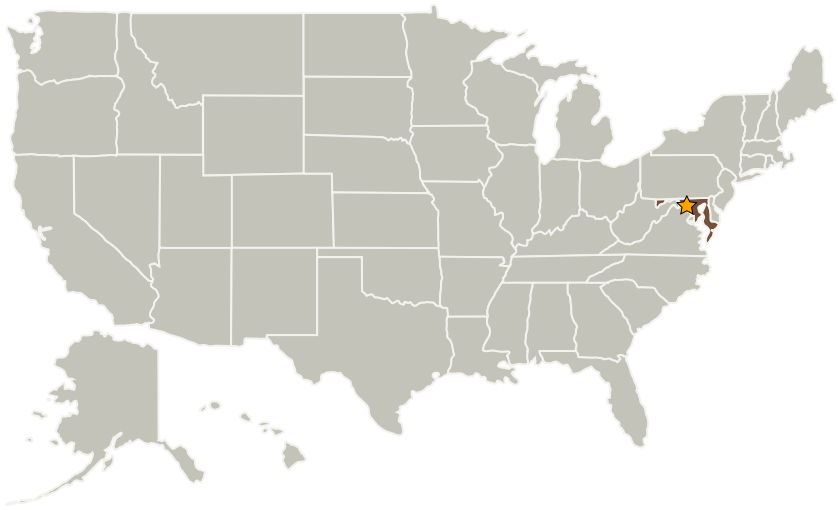
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

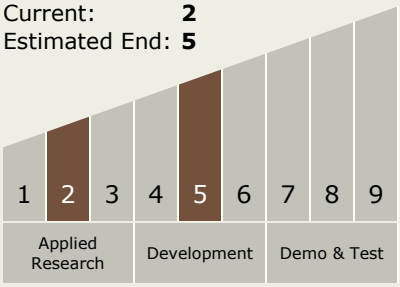
Dennis W Woodfork

Principal Investigator:

Allison L Evans

Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **5**



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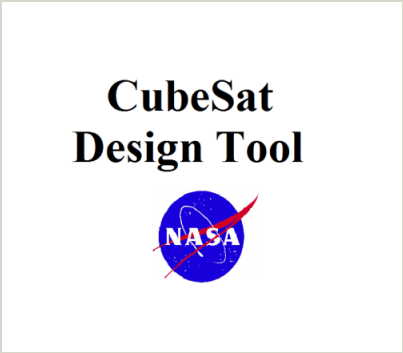
Images



CubeSat Design Tool
CubeSat Design Tool
(https://techport.nasa.gov/image/19274)

Project Website:

http://aetd.gsfc.nasa.gov

Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
  - TX13.1 Infrastructure Optimization
    - TX13.1.5 Ground and Surface Logistics